

Three Position Anti-clotting Upright Reclinable Seat

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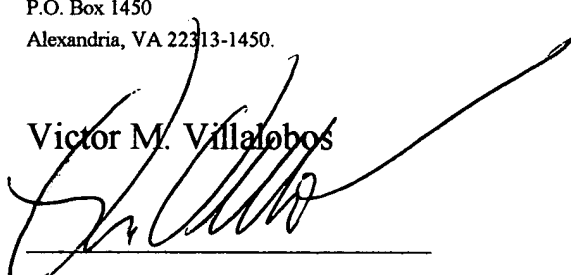
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Title of the Invention

Three Position Anti-clotting Upright Reclinable Passenger Seat

Cross Reference to Related Applications

4,157,797	6/1979	Fox	244/122 R
4,536,027	8/1985	Brennan	297/124
5,174,526	12/1992	Kanigowski	244/122R
5,556,167	9/1996	Johnson	297/423
5,628,547	8/1997	Matsumiya	297/354
5,636,898	6/1997	Dixon et al.	297/316
5,740,989	6/1998	Daines	244/118
6,227,489	7/2001	Kitamoto et al.	244/118.5
6,241,188	6/2001	Simpson et al.	244/122
6,276,635	8/2001	Ferry et al.	244/118.6

Statement Regarding Federally Sponsored Research or Development

This invention is not Federally Sponsored.

Description of Attached Appendix

No appendix is attached.

Background of the Invention

This invention relates generally to the field of transportation and more specifically to a Three Position Anti-clotting Upright Reclinable Passenger Seat.

Most airlines passengers seats today only offer two basic positions a) take-off and landing and b) reading reclined position. Both seat positions are very tiring on long trips, especially for people fifty years old and older. For older people long flights become a deadly medical liability as the prolonged seating position causes a fatal clinical condition called "Deep Vein Thrombosis"(DVT) caused by blood clotting in the legs.

According to E. Library, an expert on DVT, "Blood clots may affect one in ten passengers". With long flights, extending over two hours or intercontinental flights, there is an increase of DVT lawsuits from the flying population which clearly puts pressure on the airline industry to find an effective solution to promote a better passenger seat and or to eliminate, decrease or find a solution to the increasing amount of lawsuits brought to their steps because of this fatal affliction.

The deficiency on the current art of passenger seating is the fact that either seating position choice offered today is too tiring and crunched for long flights, and there is a need to stretch the legs for medical reasons as well as the idea of increasing comfort for passengers wanting to sleep and relax in a more reclinable position.

Most experts on the subject of Deep Vein Thrombosis agree that such blood clots seem to be on the rise affecting people of all ages and primarily affecting older (which is growing in number with the baby boomers) and high-risk people. So the advise from the experts to prevent this condition is to move around as much as possible as well as flex and stretch the legs during the flight.

This new invention promotes the reduction of DVT by allowing the passenger to adopt a

more sloped and reclinable position and stretch out their legs during long flights, especially intercontinental flights.

Brief Summary of the Invention

The primary objective of the invention is to meet the safety transportation requirements for passenger seat regulations especially during take-off and landing while allowing the passengers have a less risk from the Deep Vein Thrombosis (DVT) point of view by providing a reclinable position.

Secondary objective of the invention is to provide a more comfortable method for naturally extending the legs on long trips to reduce the risk of DVT as well as to providing more restful sleeping and a comfortable alternative than the present two positions seating available today on long flights.

Another object of the invention is the better utilization of the regular or same amount of space available today for the regular two position seat in a more efficient manner and to use of the space available for today's long national or international flights, which, in turn, allows for the airlines to try to capture as much profit as possible.

Another object of the invention is to provide an automatic sequencing positioning mechanism that can be controlled via electric automatic controls or manually thru a manual crank 505. This crank is used primarily as a back up mechanism.

Other objectives and advantages of the present invention will become apparent from the following descriptions, taken in connection with the accompanying drawings, wherein, by way of illustration and example, an embodiment of the present invention is disclosed in Fig 1a, 1b and 1c.

According to the new invention, the new passenger seat is an apparatus which allows the passenger to chose any of the three positions for take-off and landing, for reading or rest seating and an upright reclinable stretched position for allowing the legs to be in a more natural position. The passenger thru the electrical controls or others and the positioning mechanisms is able to choose the position of the seat to his preference during the flight and during take-off and landing as per the applicable transportation regulations.

In accordance with a preferred embodiment of the invention, there is a disclosed a Three Position Anti-clotting Upright Reclinable Passenger Seat apparatus comprising of several members, those elements being the main seat base **100**, the backrest **200**, the sub-back seat **201**, the seat pan **300**, the foot rest **400** and the positioning mechanism of elements group **500**. This three position seat will allow a person to rest and or sleep on a more natural sloped reclining position with the extended legs while providing a regular reclinable seat for reading as well as a up right safe seat position for take-off and landing.

Brief Description of the Drawings

The drawings constitute a part of this specification and include exemplary embodiments to the invention, which may be embodied in various forms. It is to be understood that in some instances various aspects of the invention may be shown exaggerated or enlarged to facilitate an understanding of the invention.

Figure 1a is a schematic view of the seat shown in the regular and known landing and take-off position.

Figure 1b is a schematic view of the seat shown in the regular and known reading position.

Figure 1c is a schematic view of the newly invented seat in the reclining stretch position.

Figure 1 is a schematic view showing the main elements of the invention, the main seat base element **100**, the seat back element **200**, the sub seat back element **201**, the seat pan element **300**, and the leg rest element **400**. It also shows elements **302, 304, 402** and **207** which are the main forces acting out the positioning of the sub back seat **201** and the pan seat element **300** to attain the herein three seat positions. Sub back seat elements **201** attached at the lower end and the seat pan element **300** attached at the upper end are anchored to a horizontal longitudinal hinged **206** of the length of the elements to provide union and hinged action when transitioning from reading to upright reclinable position and back.

The sub back seat element **201** is anchored at the upper end by a horizontal longitudinal bar element **205** and seat pan element **300** is anchored at the bottom by element **302**.

Element **302** hinged at position **303** and moved by element **510** provides the upward and downward vector force to move and position seat pan element **300** as desired.

Element **207** is a spring which compresses during the take-off and landing position and expands and helps the sub back element **201** to go to the upright reclinable positioning by expanding.

Seat pan element **300** is connected at the lower end to a horizontal longitudinal bar element **301** which is supported at the bottom by element **304**. Element **304** hinged at position **301** and moved by element **305** provides the upward and downward vector force to move the seat pan element **300** as desired to obtain the desired position.

Figure 2 is a schematic detailed view showing the main components of the invention in the upright reclinable position. Please notice that spring element **207** is in the relaxed expanded position during the upright reclinable position.

Figure 3 is a schematic view of the seat in the landing and take-off position. Please notice a spring element **207** in the compressed mode.

Figure 4 is a schematic view of the seat in the reading position. Please notice that spring element **207** is still in the compressed mode.

Figure 5 is a front and top view schematic of main seat frame **100** with a motorized as well as manual positioning multi element mechanism **500**. The manual crank element **505** is a manual backup system to rotate shaft element **500**.

Detailed Description of the Preferred Embodiments

In accordance with the invention, Figures 1a, 1b, and 1c shows schematically the relative position of a row of seats and particularly the new upright reclining position in Figure 1c. The upright reclining position (Fig 1c) demonstrates the legs in a more naturally stretched position which promotes the anti-clotting feature desired for the elimination of the fatal risk of a deadly malady called Deep Vein Thrombosis or also known as DVT.

Figure 1 shows a dynamic schematic view of the acting forces which position the seat pan **300**, the sub seat back **201** and the footrest **400** in an upright reclining position. The operative forces provided by elements **302**, **304**, **402** and the compressed force of the spring element **207** are the acting forces which provide easy transition from the reading position to the upright reclinable position. These actuation elements are shown controlled electrically or manual thru a multi element mechanism shown in Figure 5 as element **500** and others. These forces, actions and positioning can be obtained by a multitude of combinations of electro-mechanical devices.

Similarly and relative to the position force, the sub back seat element , Figure 3 and 4 shows the spring element in a compressed position holding compressed energy ready to be release to help for the upright reclining positioning.

Limiting the positioning of the back seat element **200** for the take-off landing position and the reading reclined position, Figure 4 shows rubber or plastic or other material stop elements **101** and **102**. These elements provide the limits for the take-off landing and reading position of back seat element **300**.

The multiple device mechanism required or a sample of the mechanism required

The multiple device mechanism required or a sample of the mechanism required for the positioning of the back seat element **200**, the sub seat back element **201** and the seat pan element **300** is shown in Figure 5.

The threaded shaft element **500** is threaded in two sections in such manner that when rotated clockwise by the electrical motor **502** or the manual crank **505** will force element **509** first to move in a horizontal to the right and stop and then upon further rotation move elements **506**, **510**, **501** to travel right in a horizontal manner and stop, the same threaded shaft element **500** can be rotated counter-clockwise to provide a reverse action sequencing.

By rotating element **500** clockwise will force element **509** to move the seat back element **200** and **201** left to right by pushing on element **204** until limited by stop limit **102**, this will transition element **200** and **201** from a take-off to a reading position. Further clockwise rotation of the element **500** will force to continue to move element **510** right and **506** to move rightward. The motion of element **510** right produces an upward forced motion on element **302** which creates a horizontal vector force to move element **303** which positions the seat pan **300** and sub back seat **201** in an upright reclinable position as shown on Fig. 1c. Element **207** which is a compressed spring will provide an upward force motion also to pull element **201** into position. Similarly element **305** will force element **304** to lift seat pan **300** to a higher position and to provide a laying down alignment between the sub back seat **201** and the seat pan element **300** to provide the resting surface to the passenger.

For obtaining a reverse lower position of the seat assembly, the counter clock

rotation of the threaded shaft **500** will reverse the sequencing in a perfect right to left order such as upright reclinable position to reading to landing position.

Starting at the upright reclinable and initiating the counter clockwise rotation of the element **500** position will force to move element **510** and **506** to move leftward. The motion of element **510** left will produce a forced motion on element **302** which decreases the horizontal vector force to move element **303** downward as shown on Figure 1b which positions the seat to go to a reading position. This counter clock rotation will also lower the seat pan element **300** thru element **304** to a reading position.

Continuing to rotate element **500** counter clockwise, from the reading position, will force element **506** to the left which will push on element **203** leftward forcing element **200** leftward until limited by stop limit **101**, this will transition the back seat element **200** and the seat pan element **300** assembly to a take-off position.

Detailed descriptions of the preferred embodiment are provided herein. It is to be understood, however, that the present invention may be embodied in various forms particularly the electro mechanical mechanisms which can be obtained using a multiple of other electrical or mechanical or hydraulic or other means of providing the desired forces and positioning of the different assemblies and subassemblies. Therefore, specific details disclosed herein are not to be interpreted as limiting, but rather as a basis for the claims and as a representative basis for teaching one skilled in the art to employ the present invention in virtually any appropriately detailed system, structure or manner.

While the invention has been described in connection with a preferred

embodiment, it is not intended to limit the scope of the invention to the particular form set forth, but on the contrary, it is intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

Although the invention is particularly applicable to aircraft passenger seats, it may also be applied to other seats used in general transportation for land or sea.

Claims

What is claimed is:

1. A seating apparatus called a Three Position Anti-clotting Upright Reclinable Passenger Seat comprising of the following assemblies:

- a main seat frame,

- a back seat,

- a sub back seat,

- a seat pan,

- a footrest

- and an automatic system of mechanisms and controls to position the back seat, the sub back seat and the seat pan assemblies to obtain three different positions, one of which allows passengers to extend the legs in a sloped naturally manner to minimize the fatal clotting in the legs caused by long extended trips.